

REMARKS

Introduction

Claims 1-6 are pending, of which claims 1 and 4 are independent. Claims 1-3 have been withdrawn.

Claim 4 has been amended to correct informalities in the claim language and to more clearly define the present subject matter. Claim 7 has been cancelled without prejudice. Care has been taken to avoid introducing new matter.

Claim Objection

Claim 4 was objected to because of minor informalities. Applicants respectfully submit that the amendment made to claim 4 overcomes this objection.

Claim Rejection - 35 U.S.C. §112, second paragraph

Claims 4-7 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants traverse this rejection for at least the following reasons.

Applicants respectfully remind the Examiner that the test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). In light of the specification and the drawings, it is clear that one of ordinary skill in the art would understand what is claimed and the scope of the claims.

Nonetheless, Applicants have amended claim 4 to more clearly define the present subject matter. Applicants respectfully submit that the amendment made to claim 4 overcomes this rejection.

Claim Rejections - 35 U.S.C. §103

Claims 4-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maeda et al. (US 6,189,771) in view of Mei (US 6,680,128) and further in view of the collective teachings of Kudas (US 6,951,666) and Kang et al (US 5,837,119). Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Maeda and Mei, as applied to claim 4, and further in view of the collective teachings of Kudas and Kang. These rejections are traversed for at least the following reasons.

Applicants respectfully submit that, at a minimum, none of the cited references discloses or suggests that “*the solder portion easily wets and spreads along the surface metal when the solder portion is fluidized,*” and “*an amount of the flake-like shaped metal powder in the soldering paste is 1-20 vol %,*” as recited by amended claim 1. Although Mei appears to disclose that the solder component is mixed with flux by 50 vol% (see, col. 4, lines 57-62 of Mei), it is clear that Mei fails to disclose that the amount of metal powder in the soldering paste is 1 to 20 vol %.

Applicants respectfully submit that the features of the present subject matter include that the solder portion easily wets and spreads along the surface metal when the solder portion is fluidized, and the configuration of the metal powder which prevents a generation of migration. The surface metal of the metal powder is selected so that a fluidized solder (i.e., a molten solder) easily wets and spreads along the surfaces. However, when such a metal powder remains around

circuit board after soldering process, there may be a migration problem. Accordingly, for the metal powder which is not in contact with the molten solder in the reflow process under heat, the surface metal (which often causes the migration) of the metal powder is taken into a core metal by dissolution.

Further, in order to prevent generation of migration, an amount of the metal powder is limited to 1-20 vol. %. When the amount of the metal powder is more than 20 vol. %, defective insulation is likely caused due to the migration. When the amount of metal powder is less than 1 vol. %, it will result in lowering of the effect of guiding molten solder by metal powder in the reflow process and invite lowering of the soldering effect.

It is clear that none of the cited references disclose or even suggest such a configuration of the metal powder of claim 4 for preventing a generation of migration. For example, Mei does not intend to wet and spread the molten solder along surfaces of the metal powder guiding the molten solder as disclosed in claim 4, because Mei describes that surface metals include copper and tin, which are not expected to have an effect on wetting and spreading the molten solder along the surfaces of the metal powder guiding the molten solder. In fact, Mei discloses "Tin is most preferable," and also discloses that the coating material may be selected from polymers (not metal) (column 3, line 64 through column 4, line 3 of Mei). As such, it is clear that Mei does not have a feature that the fluidized solder can easily wet and spread along surfaces of the metal powder. Further Mei does not disclose or suggest a relation between a surface metal and a core metal for preventing a generation of migration.

None of the remaining cited references discloses or even suggests the above identified features of claim 4, and it would not have been obvious to add these features to any combination of the cited references.

Based on the foregoing, Applicants respectfully submit that claim 4 and all claims dependent thereon are patentable over the cited references. Thus, it is requested that the Examiner withdraw the rejection of claims 4-6 under 35 U.S.C. § 103(a).

Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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